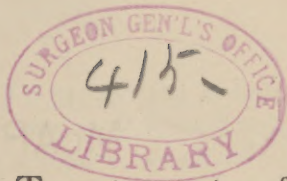


Remarks on the treatment of pulmonary phthisis







Remarks on the Treatment of Pulmonary Phthisis.

When Robert Koch announced that he had discovered the cause of pulmonary phthisis, a new era in therapeutics was inaugurated. The hypothesis was : pulmonary consumption is caused by a microbe ; microbes can be destroyed by various agents ; therefore, phthisis can be cured. Consequently therapeutists have given to the profession their experience in the use of different remedies administered for the purpose of killing the micro-organisms. Carbolic acid, creosote, iodine, iodoform, bi-chloride of mercury, etc., etc., have been taken internally for this purpose, and both startling and sensational reports have been made regarding the efficacy of the antiseptic plan of treatment. But the remedies thus far used have not withstood the test of time and further observation.

Some enterprising therapeutists have approached nearer, and have undertaken to kill the parasites by intra-pulmonary injections of germ-destroying fluids. Post-mortem examinations have demonstrated that intra-pulmonary injections produce an effect. For obvious reasons this

method has not yielded the apparent degree of success that has attended the ingestion of antiseptic remedies.

Within two years the medical world and the laity have been amazed at the reported success in the treatment of pulmonary phthisis by the use of gaseous enemata. Bergeon of Lyons, France, announced that he had obtained wonderful results from the use of carbon dioxide, impregnated with sulphuretted hydrogen, and injected into the lower bowel in fixed quantities at regular intervals. Favorable and unfavorable reports have been made regarding the value of this method of treatment. In cases that have done as well as any reported, microscopical examination has shown that the number of bacilli has not been diminished, nor the condition favorable to their development removed, although in some cases the symptoms have been relieved, to a considerable extent, for some time.

Fortunately, none of the germ-killing measures, thus far recommended, are incompatible with the use of those remedies which, heretofore, have constituted the basis of the rational treatment of this disease; that is, those remedies which have been accepted as best adapted to maintain general nutrition.

The present state of our knowledge regarding the general causes of pulmonary phthisis enables us to prevent its development in a large proportion of cases. Hereditary and acquired feebleness of constitution can be overcome. Anti-hygienic influences can be removed. Climatic causes can be avoided. It is not a necessary

sequence that children, born of phthisical parents, die of consumption. But to correct this predisposition these children must not be fed on pap and sweetmeats; they must not be subjected to the influence of bad hygiene; and they must live above rather than below a moderately high altitude. Next to hereditary influences, poverty, dissipation and enervating luxury are the most important causes of pulmonary phthisis. Two of these are under the control of each individual, and must be avoided by all who have the hereditary tendency to this disease.

When these rules are fully observed, such tried remedies as the hypophosphites will speedily help the patient over the obstacles temporarily placed in his pathway by acute diseases of the respiratory organs, such as catarrh, bronchitis, pneumonia and pleurisy, which are frequently the precursors of pulmonary phthisis.

The two most troublesome symptoms in pulmonary phthisis are vomiting and diarrhœa. They may be associated with each other or they may occur separately. When vomiting either predominates or occurs alone, it may be reflex, and be provoked by pharyngitis, laryngitis, or aphthous sore mouth. In very many cases, the vomiting depends upon conditions belonging to the stomach itself. These are usually catarrhal in character, with the acidity that attends incomplete digestion. Sometimes,

particularly when the food taken has been solid, to simply dilute the contents of the stomach with water will so aid the process of digestion that it will be completed, and thus vomiting be avoided. In some cases solid substances, such as beef, underdone, chopped fine and seasoned, are the only articles of food that can be taken without producing vomiting. The complete digestion of such a diet can be promoted by the internal use of hot water, which corrects the tendency to the production of acids by stimulating the secretion of pepsine.

But in other cases the only articles of diet which can be retained by the stomach are fluids, and then the gastric disturbance will manifest itself by the symptoms which attend fermentation.

If the food, either solid or fluid, contains sufficient calcium, and it can be completely digested and assimilated, it is unnecessary to introduce it in the form of medicine for the purpose of improving nutrition. But in these cases the food is *not* completely digested, and therefore the physician is compelled to administer remedies which aid the digestive process and correct the results of the gastric catarrh. These remarks apply, also, to the diarrhœa of pulmonary consumption. This diarrhœa does not invariably depend upon intestinal ulcers. In many cases the intestines are the seat of numerous tubercular ulcers, and yet constipation is a prominent symptom.

The secretions which control intestinal digestion are alkaline, and the *pancreas* performs its function only when

this alkalinity is maintained. Chronic disorders of digestion are very liable to be attended by an excess of acid in the intestinal tract as well as in the stomach. In this way intestinal digestion is directly prevented or impaired, and so indirectly the formation of bone, blood, and muscle.

In both classes of cases, those in which *vomiting* depends upon gastric catarrh and those in which *diarrhœa* is caused by gastro-intestinal catarrh, the hypophosphites taken in large quantities and continued for months are especially serviceable. The bases of these salts, the acid having been set free and entered into harmless combinations, neutralize the free acids in the alimentary tract, which are produced by fermentation and faulty digestion. Lime and soda and their preparations have been pre-eminent among therapeutic agents since the early days of medicine. Their general tonic properties, the aid which they afford to digestion, and the tone and energy which they impart to the nervous system, cannot be over-estimated while endeavoring to counteract the baneful influence of the *tubercle bacillus*. If the normal balance between waste and supply can be maintained, nutrition will be at its highest point. One of the great essentials to this end is the proper performance of gastro-intestinal digestion. When these indications are completely met, the pulmonary disease becomes non-progressive or is cured.

Bronchitis, as the term is most commonly used, is a catarrhal inflammation of the mucous membrane of the bronchial tubes. It occurs most frequently in the young and in those who are over fifty years of age. Many persons have a peculiar tendency to bronchitis, and suffer from it on trifling exposure. All these subjects have some constitutional vice, as the gouty, the rheumatic, the rachitic, the syphilitic, or the tubercular.

Debilitating diseases, occupations and habits, and all chronic pulmonary diseases, favor the development of bronchitis. Previous attacks increase the liability to its recurrence. It occurs frequently in the course of chronic diseases of the heart. Frequent, sudden, or severe variations of temperature are predisposing causes. It is a prominent symptom in typhoid fever, measles, and whooping cough, and has been noted frequently in small-pox and the eruptive fevers.

Chronic bronchitis is characterized by paroxysmal cough, difficulty of breathing, and thick mucous or mucopurulent expectoration. This form occurs with pulmonary emphysema, and in these cases the patients usually suffer from asthmatic attacks. They make up that large class who suffer from "winter cough," "bronchial consumption," "consumption such as our forefathers used to have," that lasted for years. In chronic bronchitis the expectoration may have an ashy or deep-green color and be foetid. When this occurs, cavities, of greater or less size, have been formed by dilatations of the bronchial tubes, and

these sacs contain muco-purulent secretion which undergoes decomposition. The odor of the breath and expectoration, in these cases, is exceedingly offensive.

The constitutional disturbance in the chronic cases is sometimes very much like that of pulmonary phthisis. The cough, the profuse purulent expectoration, the emaciation, the night-sweats, the impaired appetite, the fever, have led, frequently, to the diagnosis of pulmonary consumption. But, from all these the patient may rally, become comfortable and regain his usual weight during the summer months, and then pass through a similar ordeal in the next Autumn and Winter.

All those who have a peculiar constitutional tendency to bronchitis, or who have the rachitic, the gouty, the rheumatic, the tubercular, or the syphilitic diathesis, or who have impaired pulmonary and gastro-intestinal mucous membranes caused by chronic cardiac disease, or who are convalescing from measles, whooping cough, typhoid fever, or diphtheria, and have more or less cough with poor appetite, should take the hypophosphites as they constitute one of the best remedies which can be used. Begin their use early, take them in large quantities, and continue them as long as the bronchitis exists. They are not incompatible with a very large number of remedies, which have been employed beneficially in these diseases, and the beneficial effect of these remedies in most instances is increased by adding to them the compound syrup of the hypophosphites.

Especially in the cases of chronic bronchitis, where a

recurrence may be expected, the patient should begin to take the hypophosphites with vegetable bitter tonics *before the autumnal invasion*, for the purpose of placing the system in the best possible condition to resist the attack, which always comes when the patient "does not feel quite so well as usual." If the appetite be sustained and digestion be performed properly, the recurrence, if it comes at all, will be less severe and more easily recovered from, than when it occurs in a system laboring under impaired nutrition.

The number of acute diseases which affect general nutrition so profoundly as does *typhoid fever*, is small. Extreme emaciation is one of its most prominent symptoms. The alimentary tract, more especially the intestinal portion, has been invaded by lesions which have either greatly impaired or entirely arrested the functions of the digestive organs, and have left the organs themselves in an enfeebled condition. Relapses and grave complications may arise from either improper feeding or the use of improper food. Hence it is of the utmost importance, when convalescence has been established, to prevent the patient from overeating and also to see that the food which he takes is of the proper quality. The weakened stomach is, frequently, unable to digest what is sent into it, and the result is the formation of acids which cause sour and gaseous eructations with more or less of intestinal flatus. When the

stomach performs its function very well, the starchy portion of the food may find *intestinal* digestion so feeble that similar disturbances follow, and these may be accompanied by either diarrhœa or constipation.

It is a puzzling question, very frequently, how to best guard the patient, who is convalescing from typhoid fever, against the occurrence of these accidents. His appetite is nearly, or quite uncontrollable, and, in spite of all orders and injunctions, he will eat voraciously.

In some of these cases the ill effects produced are due simply to taking *too large quantities of food*. But besides this, the weakened condition of the stomach and intestines prevents the secretion of the gastric juice and the intestinal juices in sufficient quantity to *complete* normal digestion, hence fermentation takes place.

To give tone to the nervous system which presides over these functions, and to strengthen the muscular apparatus of the stomach and intestines—which is an important mechanical factor in the completion of digestion—no remedies are of greater value than the hypophosphites and the bitter tonics. The hypophosphites, by their alkaline properties, neutralize the acids produced by fermentation and incomplete digestion, and the bitter tonics, such as strychnia and gentian, when well diluted, stimulate the secretion of gastric juice and intestinal fluids. These acids, when allowed to remain free in the alimentary tract, give rise to pain, belching of sour gasses, rumbling in the bowels, and sometimes acrid diarrhœal passages.

In all cases of convalescence from typhoid fever use the following formula:

R Syr: Hypophos: Comp: McArthur, one bottle.
Liquor Strychnia= ʒij (equal to one grain of Strychnia).

M. Sig. — Two teaspoonfuls three times daily to adults.

In all wasting diseases, subacute or chronic in character, anæmia and emaciation are prominent symptoms. One of the most frequent causes of the continuation of these symptoms is either primary or secondary gastric catarrh with *excessive acidity*.

The most direct method of correcting these errors of nutrition is to administer remedies which exert a special influence upon the nervous and muscular systems and upon the blood. For this purpose no remedy excels the hypophosphites. Many patients in the latter stages of acute infectious diseases, or early in convalescence from typhoid fever, pneumonia, diphtheria, etc., suffer from *aphthous sore mouth*. This affection affects general nutrition seriously, as a rule. It is due to a vegetable parasite, the *oidium albicans*. This growth is characteristic of the disease. The best method of destroying the parasite is to wash the affected surface with preparations of lime and soda. The hypophosphite of soda has an established reputation of being nearly a specific in this disease. But

the salts of these drugs should also be taken internally. They act both locally and generally, and the latter is no less important than the former, because this vegetable parasite never appears except when general nutrition is impaired.

PHOSPHORUS IN MEDICINE.

Since the discovery of phosphorus, by Brandt, it has been an interesting substance in both arts and in medicine; it is in relation to the latter that I especially wish to consider it.

It has been employed in its pure metalloid form; in combination with metals, as the phosphides of iron, zinc, copper, etc.; in union with one atom of oxygen, as in hypophosphorus acid, and its salts; with three atoms of oxygen, as in phosphorus acid, and with five atoms of oxygen, as in phosphoric acid; and all of these oxides have three hydrates, or combining numbers with water, alkalies, metals or other bases—mono-, bibasic and tribasic, with intermediate combinations.

The metalloid is a great favorite with too many physicians to admit of the question as to its therapeutical efficacy. It has proved useful in sexual exhaustion, brain and nerve debility, skin diseases, pneumonia, and other maladies. As to its good offices, there can be no question; but it is, like mercury, very much of a two-edged

sword, capable of serious mischief as well as positive good.

That the oxides of phosphorus are ubiquitous in the animal organism, has long been known, but the difficulty in isolating these oxides in their normal nitrogenous formula, and determining their exact character, as to the degree of oxidation in which they normally exist, has led to dispute—whether they are found as phosphates, or in a lower degree of oxidation. The Liebig school of chemists take the former ground, while the Muller school claim that the phosphatic nutrients of the human organism exist in an oxidizable form.

Hensing found oxidizable phosphorus in the brain of animals, as also in the human brain, in 1779; Jordan, in 1799; Vanquellin, in 1812; Courbe, in 1836; Polk, in 1857; Percy, in 1872; and Thudicum, in 1875.

Churchill, as every physician well knows, declared that consumption has its origin in deficiency of the hypophosphites in the blood, thereby causing a diminution of animal heat, derangement of nutrition, and tuberculosis. He promulgated this doctrine as early as June, 1855, reiterated in his paper to the Academy of Medicine of Paris in 1857, wrote and published a work of a thousand pages to substantiate this idea in 1864, and a smaller work in 1875.

Dr. Polk, of Philadelphia, in his thesis to the University of New York, in 1858, gave the results of his investigations as to causation of tuberculosis, in chemical analysis of the brain, blood and tissues of twenty victims

of phthisis. He attributed the causation of the disease to deficiency of oxidizable phosphorus in the nerve centres which preside over digestion, assimilation and respiration. (See *Med. and Surg. Report*, Aug. 2, 1872, *Cincinnati Lancet*, Aug., 1877, *New Orleans Med. and Surg. Jour.*, Sept., 1877, and his last work on "Tuberculosis, Scrofulosis and Allied Diseases.")

This deficiency Polk proposed to remedy by isolating oxidizable phosphorus from animal brain, dissolving it in glycerin, and administering it. He gave me some of this preparation in May, 1869.

Routh, of London, Tilbury Fox, and Andre Sanson had all, before 1870, advocated the use of organismal phosphates as very superior to the ordinary kind. The introduction of the hypophosphites belongs solely to Churchill. Until he used them, they were unknown as therapeutical agents. To-day they are very extensively used. Personne, Devergie, Thompson and Solon thought that phosphorus acquires poisonous properties by change into hypophosphorous acid. Sawitsch, Bucheim, and Shuchdart, of the University of Dorpat, in May, 1854, however, proved by a carefully conducted series of experiments that the reverse is true, that oxidation robs phosphorus of its toxic properties, that hypophosphorous acid is comparatively harmless.

Percy, in his Prize Essay, 1876, quotes Tardieu's experiments, as also his own, but neither Tardieu nor Percy do more than corroborate the experiments of the Profes-

sors of Dorpat, made twenty-two years before, that hypophosphorous acid is not poisonous.

In 1889, it may, however, seem to be but folly to argue this point. Every tyro in medicine, every drug clerk, and a very large portion of the laity, know that the hypophosphites can be given in large doses, without danger; that in general vital deterioration, in brain and nerve exhaustion, in consumption, bronchitis, sexual debility, anæmia and debility, the hypophosphites do much good, while they can be used with safety. The metalloid phosphorus, on the other hand, while valuable as a remedy, requires care and vigilance in its administration. Unlike the hypophosphites, it is not a real nutrient, but is simply a stimulant to the brain, nerves, skin, and secretions in general.

In impotency, in pneumonia, in neuralgia, in skin diseases, it is superior to the hypophosphites. It is best given in pill form, as it is more slowly resolved into phosphureted hydrogen. The dose should never exceed one-fiftieth of a grain, and then not repeated more than thrice daily. The urine should be carefully tested, and the remedy withheld if albumen appears. The fact has been known for the past twenty-eight years that continued use of phosphorus produces fatty degeneration of the liver, kidneys, and, in fact, of all the organs.

In those days of numerous original discoveries, the fact may be stated that Hauff (Wurtz Corr-Bl, 1861) first declared the coincidence between phosphorus poisoning and fatty degeneration of the organs.

After Hauff, Ehrle, Kohler and Renz experimentally demonstrated the accuracy of his observations (Tub. Diss., 1861). Lewin subsequently corroborated the conclusions of his predecessors (Virchow's Arch., Vol. XXI, p. 506). Murk and Leyden experimented on animals, and invariably produced fatty degeneration of all the organs by phosphorus poisoning. Wagner found that phosphorus poisoning produced fatty metamorphosis of nearly all the organs of the body (General Pathology, p. 305). Percy also found fatty degeneration of the organs follow phosphorus poisoning (Prize Essay, 1876). Polk says phosphorus poisoning does not produce a true fatty metamorphosis, but a fatty and oily infiltration of all the organs (*Michigan Medical News*, 1879).

The ordinary hypophosphites are monobasic. This all chemists, but Dr. Percy, acknowledge (he says they are tribasic). If, however, the alkali and phosphorus be placed in water, and the phosphorus be slowly oxidized by binoxide of hydrogen, tribasic hypophosphites can be formed. As all the phosphorus compounds of the animal organism are tribasic, it seems to me that the tribasic hypophosphites would be more assimilable, and would give better results. As yet, they are only laboratory curiosities, and would be expensive to make.

HORACE E. ASHMEAD, M. D.

— *Medical Brief*, July, 1889.

PHILADELPHIA, PA.

EFFECTS OF THE HYPOPHOSPHITES UPON THE SYSTEM.

"One of the first effects produced by the use of the hypophosphites is a general increase of nervous energy, with a feeling of ease and comfort. The second effect is an increase of appetite; digestion is improved, and the bowels become regular in their action. The quantity and color of the blood is increased, so that in females menstruation becomes easier, more abundant, and more regular; respiration is controlled, a better expansion of the chest is observed, cough improves, easy expectoration is produced, night perspiration diminishes, the face becomes fuller, the lips red, the nails and hair grow, and in children the teeth, showing the importance of the hypophosphites on the organ of nutrition."—*Dr. Taylor, Lancet.*

"In the present state of medical science," says Dr. Churchill (p. 50), "phthisis, when not treated by the hypophosphites, at whatever period of development it may be observed, however early the stage at which it may be taken in hand, must be regarded as almost always fatal.

"All the means hitherto used have no certain action except against the accidental complications of the disease; its essential causal conditions remain completely beyond their control, for under the most able and most experienced hands the number of recoveries is *less than four per cent.*

"In the very rare cases where phthisis ends in recovery, it has been hitherto impossible to determine what were the conditions to which this result was due. As the prognosis of the almost certain fatality of phthisis depends solely on the *nature of the disease itself*, it is impossible to determine beforehand, with the least probability, whether any given case will be an exception to the general rule.

"On the other hand, when phthisis is submitted to the specific treatment of the hypophosphites, the prognosis may, in the great

majority of cases, be established with a degree of certainty equal, if not superior, to that of any other curable disease.

"It rests upon two series of conditions: the extent of existing pulmonary lesion, and the presence or absence of complications. These may be summed up as follows:—

"When there are no complications, the prognosis may be thus stated:—

"1. Phthisis in the first stage ends in recovery.

"2. It also ends in recovery in the second stage, provided one lung only is affected.

"Hence it follows that the use of the hypophosphites is followed by recovery in cases where the local disease has not proceeded beyond certain limits, and that consequently every patient *may be cured provided the hypophosphites be used in time.*

"3. Phthisis in the third stage, when limited to one lung, may also be followed by a cure.

"4. When tuberculosis in the second stage exists in both lungs, recovery depends upon two conditions. First, the cessation of the diathesis, which is brought about by the proper use of the hypophosphites; and, secondly, upon the possibility of arresting, softening, or compelling it to proceed but slowly, which may be frequently obtained by appropriate secondary means. The favorable conditions in such cases are when the deposit is only partial in both lungs, or when, if diffused throughout both lungs, the tubercles are disseminated and far apart.

"5. When the disease has reached the third stage, and tuberculosis has attacked both lungs, recovery is still possible.

"6. When there are cavities in both lungs, recovery takes place in a few exceptional cases.

"I have seen three examples of this. One was a lady who had treated *herself* by the hypophosphites, and who after her recovery came to consult me because still suffering from dyspnœa, without any other symptom. She was very stout. The other two cases

which were under my treatment are both in perfect health. One is an officer in the Imperial Guard, and has been doing duty for two years past.

"7. The prognosis of acute phthisis rests on the same principles as that of chronic, but it offers more uncertainty on account of the difficulty of ascertaining the extent of the already existing lesion, and also of distinguishing between acute tuberculosis and acute softening.

"8. In children, the prognosis is much more favorable than in adults, which is altogether contrary to what is observed with any other mode of treatment. In children I have seen recovery take place with the hypophosphites, in nine cases out of ten, at all stages of the complaint.

"9. With the hypophosphites, patients who have an hereditary predisposition have more chance of recovery than those who have no predisposition.

"Within the last ten years there has been an appreciable falling off in the mortality of consumption. That the use of this remedy is the real cause of this decrease is shown by Dr. Bennett confessing that he has given the hypophosphites to a *large proportion* of his patients, and that nearly fifty per cent. of those so treated had got well. Dr. Williams acknowledges that, with cod-liver oil alone, previous to 1862, he had not cured two per cent. of his patients; that when the oil fails, he finds the hypophosphites to succeed, and that since 1862 (*i. e.*, since the introduction of the hypophosphites) he has cured seventy-five per cent. Drs. Williams and Bennett used neither phosphorus nor the phosphates; they used the hypophosphites, and there is not upon record a case of the cure of consumption by free phosphorus."—*Churchill*, p. 380.

"Were I only to quote the successful cases that I have had under my care, the cases in which the lung disease has been arrested, and even cured, *I would quote many instances of cure, myself included*, which have apparently taken place under the influence of the hypophosphites as they were long and constantly administered."—*Dr. Henry Bennett, Pulmonary Consumption*, p. 99, 1871.

Dr. J. C. Brown, lecturer on mental diseases to the Leeds School of Medicine, says: "We owe a debt of gratitude to Dr. Radcliffe for pointing out the value of the hypophosphites in debility and nervous diseases."

J. Thorowgood, M. D., Physician to Hospital for Diseases of the Chest, Victoria Park, England, says: "I have administered hypophosphites with a view to increasing and restoring wasted nerve force, in an exhausted state of which I believe many cases of consumption to have their origin. Such experience as I have had leads me to think, with some others who have made careful trial of the hypophosphites in consumption, that these salts are certainly to be regarded as valuable remedial agents in the treatment of this disease, especially in its premonitory and early stages."

Dr. Lieto Regnoli, Physician-in-Chief to the Hospitals, writes to Dr. Fideli as follows: "For several years past I have adopted in my private practice, for the treatment of pulmonary tuberculosis, Dr. Churchill's chemically pure hypophosphites, and I have endeavored scrupulously to carry out his indications. I have treated in all *twenty-one cases* in different stages of the complaint. Of these, seven in an advanced state died; nine, *who were in the condition of curability* indicated by Dr. Churchill, were cured; the other five were very much improved.

The attention of the Medical Profession is invited to the following partial list of the many eminent physicians who have used McArthur's Syrup in their practice, and have formally written of its efficacy:—

Dr. D. S. WEBB,	Cranesville, Tenn.
" GERTRUDE G. BISHOP,	Brooklyn, N. Y.
" F. D. STEVENS,	City Physician, Lynn, Mass.
" O. G. CILLEY,	Surgeon-General, Mass.
" D. C. BESSE,	Stanwix, N. Y.
" PRINCE W. PAGE,	Boston, Mass.
" F. LE SIEUR,	Philadelphia, Pa.
" JOHN CALDWELL,	Baltimore, Md.
" A. J. HALL,	Pontotoc, Miss.
" CHARLES STURTEVANT,	Hyde Park, Mass.
" J. B. SULLIVAN,	Stanton, Mich.
" T. P. McELREATH,	Woodbury, Ga.
" WM. A. McDONALD,	Lynn, Mass.
" L. F. WARNER,	Boston, Mass.
" JOHN DIXWELL,	" "
" C. IRVING FISHER,	" "
Prof. HARVEY L. BYRD,	Baltimore, Md.
Dr. THOMAS H. SALMON,	Lansingburg, N. Y.
" LUTHER ROSSITER,	Lake Forest, Ill.
" H. W. OZIAS,	Philadelphia, Pa.
" SAMUEL H. WORCESTER,	Salem, Mass.
" C. B. TEFFT,	Utica, N. Y.
" H. M. JERNEGAN,	Boston, Mass.

Dr. CHARLES AHEARN,	Lynn, Mass.
" W. C. COLE,	Attica, Ind.
" W. B. ARRINGTON,	Greensborough, Ga.
" GEO. H. MUDD,	Millwood, Mo.
" S. G. COOK,	New York.
" G. M. ZIMMERMAN,	Graceham, Md.
" I. LEWIS DONET,	Geneto, Va.
" ROBERT J. TOMB,	Armagh, Pa.
" A. A. ROWLAND,	St. Louis, Mo.
" F. S. WORCESTER,	Peabody, Mass.
" E. H. SPOONER,	Brooklyn, N. Y.
" E. A. CLARKE,	Benton Harbor, Mich.
" P. F. BELLAMY,	Oakwood, Tenn.
" GEO. M. BOWEN,	Jeffersonton, Va.
" L. W. SUTHLAND,	Marengo, N. Y.
" GEO. F. HORTON,	Terrytown, Pa.
" WM. V. TAYLOR, Jr.,	Davis, La.
" J. T. LEONARD,	Boston, Mass.
" C. F. BRANCH,	Coventry, Vt.
" ISAAC WATTS,	Grand Rapids, Mich.
" J. A. GILLISS,	Baltimore, Md.
" O. A. ELLIOTT,	Russell, Iowa.
" W. C. CUTLER,	Chelsea, Mass.
" JOHN S. LYNCH,	Baltimore, Md.
" J. McMORRIS,	Belle Plaine, Iowa.
" A. N. JOHNSON,	Minden, Mich.
" G. W. LOVATT,	New York, N. Y.
" S. MATLACK,	Raleigh, W. Va.
" H. E. LINDSAY,	Whitewater, Mich.
" J. W. LOWELL,	Portland, Maine.
" L. F. BUGBEE,	Derby Line, Vt.
" E. W. OWEN,	Brooklyn, N. Y.
" J. S. DANIELS,	Rochester, N. Y.
" C. C. HIGGINS,	Chicago, Ill.

Dr. D. F. LANE,	St. Elmo, Ill.
" LUTHER G. CHANDLER,	Boston, Mass.
" DAVID F. DREW,	Lynn, Mass.
" WM. H. RUDDICK,	Boston, Mass.
" T. W. SIMPSON,	Liberty, Md.
" F. F. MOORE,	Lynn, Mass.
" D. BASHAW,	Craigsville, Va.
" T. CLEMENT WOOD,	New York.
" R. B. S. HARGIS,	Pensacola, Fla.
" C. A. SIGLER,	El Dorado, Kan.
" G. M. HENDREN,	Ambrose, Ky.
" B. H. THURMAN,	Cheraw, S. C.
" L. F. WOLTZ,	Hillsville, Va.
" J. HUGGINS,	Newbern, Ala.
" J. E. CLAGETT,	Baltimore, Md.
" J. M. LANHAM,	Nesbitt, S. C.
" J. F. WILSON,	Philadelphia, Pa.
" A. O. STIMPSON,	Thompson, Pa.
" RODOLPHE T. ETAVARD,	St. Louis, Mo.
" E. A. HILDRETH,	Wheeling, W. Va.
" D. SMITH,	Noblesville, Ind.
" F. L. NEWMAN,	Ouachita City, La.
" E. E. REYNOLDS,	Rock Bluff, Neb.
" E. L. DAVIS,	Wallace, Miss.
" R. C. ARNETTE,	Monticello, S. C.
" W. H. WHITLEY,	Paterson, N. J.
" JOHN Y. SIMPSON,	Coyville, Kan.
" R. G. STANWOOD,	Newark, N. J.
" GEORGE BAYLES,	Orange, N. J.
" J. T. G. EMERY,	So. Waterborough, Me.
" A. J. HENDERSON,	Heathsville, Va.
" H. SADLER,	Waddams Grove, Ill.
" E. L. H. BARRY,	Jerseyville, Ill.
" J. I. HERRICK,	Mauston, Wis.

The following letters may be of special interest:

DR. J. A. McARTHUR:

MY DEAR DOCTOR, — I take this occasion to say that I used the Syrup of Hypophosphites you were kind enough to furnish me for trial in suitable cases in the City Hospital, both in the in- and out-patients' departments, and in all cases with very decided benefit. In every case emaciation was arrested, and in some there was a decided gain of flesh and strength, with a corresponding improvement in the cough and other symptoms.

I now prescribe it habitually in my private practice, and *always with benefit* when the cases are properly selected. Of course, when patients come to me with cavities already formed, and other points ready to soften and break down, in a state of extreme emaciation, and suffering from pronounced hectic, I do not prescribe your Syrup with any expectation of permanent benefit. But, even in these cases, I think the patient's condition is improved, waste is retarded, and *life thus prolonged*.

I am your most obliged and obedient servant,

JOHN S. LYNCH, M. D.

Prof. Principles and Practices of Medicine and Clinical Professor of Heart, Throat and Lungs, in College of Physicians and Surgeons.

BOSTON, July 25, 1888.

MY DEAR DOCTOR: — I have just had the pleasure of telling a mother here, that her child, who has been so very ill, is now in the sure way to recovery. Fanny Fencelly, 20 months old, inherited from her father (now dead) phthical tendencies of a rapidly developing form. When I began to visit her last winter she was wasted to an extreme degree, coughing and raising thick sputa with great dyspnoea. the top of the left back crackled plainly on auscultation, and night sweats were common. I put the child on

SYRUP HYPHOS: COMP: McARTHUR,

and in general looked to the surroundings as well as possible. She can enjoy her life now, sits up, eats, sleeps without sweats, walks as much as her legs (still thin and weak) will let her. has but little cough, and, in short, is getting steadily well instead of surely giving up.

Because of the very grave conditions of this case, I consider it worth recording, or showing to you at any time you might like to see her.

Very truly,

JOHN DIXWELL, M. D.

General Agent Massachusetts Society for the Prevention of Cruelty to Children.

From F. LE SIEUR, M. D.,

Lecturer on Dermatology, Medico-Chirurgical College, Philadelphia.

PHILADELPHIA, June 8, 1885.

DEAR DOCTOR McARTHUR: — In cases of skin disease, where the system is far below the normal standard, with progressive waste of tissue, a remedy which can arrest this morbid process, and, indeed, re-supply the waste, is pre-eminently indicated. Such a remedy I find constant use for in my clinic at the Medico-Chirurgical

College, and among the many preparations the Hypophosphites rank superior in many instances to cod-liver oil. In this connection, I want to tell you, my dear doctor, that your Syrup of the Hypophosphites has given me the most unbounded satisfaction, so satisfactory that I deem it no more than proper and just to inform you of the fact. May success attend you.

Faithfully yours,

F. LE SIEUR.

1 EAST 42D ST., NEW YORK, Jan. 7, 1884.

DEAR DOCTOR:—I have intended writing you many times to add my mite in the praise of your valuable preparation of hypophosphites, but have been prevented in one way or another from doing so. There is no medicine that I prescribe more frequently and more successfully than your preparation of hypophosphites. I have used it in tubercular infiltration of the lung many, many times, with the happiest results, and have seen such processes stop, then recede, and finally leave no trace of any prior morbid condition. I have also used it in patients convalescing from croupous and broncho-pneumonia, where the exudation is slowly or not at all absorbed, and in such cases if this medicine be used *persistently for many weeks* all morbid conditions disappear, and the lung is free once more to carry on its vital function.

I think one reason why physicians do not always succeed with these hypophosphites is that they do not instruct their patients to take them *long enough*. In neurasthenia and allied nervous disorders, these hypophosphites may be used with great advantage often.

Respectfully,

J. MONTFORT SCHLEY, M. D.

Professor Physical Diagnosis, Woman's Medical College, &c.

29 NORTH COMMON ST., LYNN, March 23, 1880.

J. A. McARTHUR, M. D.:

DEAR DOCTOR,—Having used your *chemically pure* Syrup of the Hypophosphites of Lime and Soda for some time in my practice, it affords me pleasure to recommend it to my patients who are suffering from incipient phthisis, chronic bronchitis, and other pulmonary affections. In all wasting diseases I think it a most reliable remedy. It increases appetite and promotes digestion.

I am yours truly,

DAVID F. DREW, M. D.,

Councillor Massachusetts Medical Society.

"I have used Syrup Hypophos: Comp: McArthur for four years with most excellent results. It is very valuable in phthisis pulmonalis, bronchitis and many forms of infantile diseases, especially when the osseous system is defective."

GERTRUDE G. BISHOP, M. D.,

310 Throop Avenue, Brooklyn, N. Y.

"I have frequently prescribed Dr. McArthur's Syrup of Hypophosphites, and have found it to be a therapeutic agent of great value in the treatment of many diseases."

O. G. CILLEY, M. D., Surgeon-General, Mass.

REPORT OF CASE BY DR. McARTHUR.

For obvious reasons, I have refrained from reporting any cases treated by myself with the Syrup Hypophosphites, but, as the following so nearly concerns me, I venture to copy it from my note book:—

Patient, my brother, E. R. McArthur, aged thirty-eight years; residence, Marblehead; December, 1875.—Has had a cough and been ailing for several months, with muco-purulent expectoration, great debility, and considerable emaciation, with excessive night-sweats. Has had several attacks of hæmoptysis; one very severe; thinks a pint or more of blood. His voice is hoarse, and has tickling in throat. Suffers from dyspnœa, and is obliged to desist from business; no appetite, digestion bad, vomiting frequent, and some diarrhœa. Had taken various emulsions of Cod-liver oil, malts, tonics, etc., but without finding any relief.

Local Signs.—Expansion of two sides of thorax unequal, the left side hardly rising at all during inspiration. Front, dulness on percussion over the whole left side; diminished resonance on the right side for three fingers' breadth below clavicle. Auscultation revealed on left, above clavicle, blowing respiration, with gurgling, and moist crepitus; cavernous cough and pectoriloquy; below clavicle, same signs, *i. e.*, moist cracklings extending down to base. Above clavicle, on right, jerking respiration, with moist rales, increased vocal resonance, exaggerated respiration in the rest of lungs. Behind, on percussion, dulness in left supraspinous fossa. On auscultation, on left, sharp cracklings in the infra-spinous fossa.

Diagnosis.—Cavity at apex of left lung, with tubercles over the whole of its front aspect; also softening at front of apex of right lung. I prescribed:

R. SYR: HYPOPHOS: COMP: McARTHUR.

Dose.—A dessertspoonful, gradually increased to a tablespoonful, after each meal, in a little port wine and water.

Feb. 1.—Has begun to improve; cough somewhat diminished, less perspiration at night, and better digestion. Continue a tablespoonful of the Syrup three times daily, with liberal diet and wine.

Feb. 15.—Improvement continues.

March 1.—Stethoscopic signs considerably improved; less dulness and fewer rales. Continue treatment.

March 20.—Manifest improvement; has gained seven pounds in weight; feels better and stronger than at any time since the com-

mencement of his illness. As stomach and digestion were now good, ordered Cod-liver oil, a tablespoonful two or three times daily, one hour after the meal, and continue the Hypophosphites in whiskey and water.

May 1. — General condition greatly improved; slight cough in morning, with a little expectoration; appetite good; voice recovered its natural tone. Omit Syr. Hypophosphites for a time and take liberal diet, with porter or ale.

June 9. — Reports cough ceased almost entirely; no expectoration, has gained flesh and sleeps well; no thoracic pains or difficulty in lying down; no fever or night-sweats; hoarseness has disappeared; can sing as well as ever; appetite good, and can attend to his business as well as before his sickness. He took the Syrup at intervals for the next two years, as he said he felt better by doing so. I saw this patient about one hour ago (Oct. 20, 1889). He continues to enjoy perfect health, and says, "*I never felt better in my life.*" He is at the present time in *charge* of my laboratory.

In connection with this case, I wish to call the attention of physicians to one very important consideration as to the therapeutical action of the different hypophosphites. I have experimented with a number of these salts, particularly those of soda, lime, iron, potash, manganese, etc., and am convinced that in the *treatment of phthisis the hypophosphites of lime and soda* should alone be used.

Four years ago Dr. Churchill wrote: "Extended experience has now shown me that in the treatment of tuberculosis the practitioner should confine himself to the use of *lime and soda*. The effects produced by these two salts, when properly combined and administered in phthisis, have such a character of constancy that I have seldom thought myself justified in intermitting them or supplying their place by any other." He further says: "In the first edition of my work on Consumption, I stated that the action of the hypophosphite of iron should only be tried with *great caution* in cases of consumption, as in several for which I had prescribed ferruginous preparations simultaneously with the hypophosphites, their exhibition appeared to be followed by hæmoptysis, or hemorrhage in some shape or other. Subsequent experience has since fully confirmed these views. Not only was hemorrhage produced in almost every instance in which I used the hypophosphite of iron, but in patients who have been previously taking ferruginous medicines, it will be found that it is very difficult, at first, to keep the effects of the hypophosphites within the limits of their *physiogenic* action. For this reason I have entirely given up the use of the hypophosphite of iron in phthisis, and confine

myself almost entirely to the use of the **CHEMICALLY PURE SYRUP of Lime and Soda.**"

My own observations entirely coincide with Dr. Churchill's remarks, and it was during the administration of a well-known Compound Syr. of Hypophosphites, which I subsequently learned contained iron, manganese, strychnine, etc., that my brother had his first attack of hæmoptysis, and subsequent observation has convinced me of the highly dangerous character of these compounds in phthisis when there is the least tendency to a hemorrhagic diathesis. I could copy from my case-book many instances to verify the above, cases that have occurred, not only in my own practice, but in the service of other physicians with whom I have been called to consult. A case in point occurred but a few months ago, and is briefly as follows: I was called in consultation to see a young lady who was suffering from, not profuse, but nevertheless troublesome and persistent hæmoptysis which had lasted a number of days, and could not be controlled by any of the usual remedies. On inquiry, I found that she still continued to take, three times daily, a Compound Syrup of Hypophosphites, which on examination proved to be an impure article, containing among other drugs iron, strychnine, etc. This medicine was ordered to be discontinued, and in two days the hemorrhage ceased. At the end of one week she was ordered a dessertspoonful of McArthur's Syrup Hypophosphite of Lime and Soda in port wine and water, three times daily, with the meal; one tablespoonful of cod-liver oil one hour after breakfast, and tea, and liberal diet. There was no more bleeding, and she is now making a good recovery.

CHILDREN.

“**The Hypophosphites Prevent and Cure Consumption in Children.**—I have had constant opportunity of observing the action of the hypophosphites of *lime* and *soda* in delicate children, especially those born of consumptive parents, and I feel bound to state that I have never seen *one* single instance of such children becoming consumptive when the remedy has been used in a proper manner. The hypophosphites also exert a *special action* in

promoting the *growth* of children. I have had a large number of children under my care, and may state broadly that recovery in children under adult age, at all stages of consumption, whenever the amount of sound lung tissue remains sufficient to support life, takes place in nine cases out of ten. I might quote instances of children, where the disease had already reached the third stage, who have recovered under the hypophosphites, and have been in the enjoyment of sound health for many years.

“Teething Children.—Convulsions.—In the first teething of children the hypophosphites produce an heroic effect, and, if properly used, will act as a preservative against the accidents of this difficult period of life. When given to teething children who are pale, peevish, sad, emaciated, without appetite or strength, suffering from fever and diarrhœa, loss of sleep, and apparently in imminent danger of convulsions, I have never seen a single case where the whole of these symptoms have not yielded to a few doses of Syrup of Hypophosphites of Lime and Soda, and the evolution of the teeth afterward proceed as if in perfect health.” — *Churchill*, page 80.

Results in my practice verify the above, and particularly in the case of my own little girl. The dose should seldom exceed one small teaspoonful in twenty-four hours, and be so divided as to give one-quarter every sixth hour, mixed with a little cold water.

“In tabes Mesenterica, Dr. Purdon has found that the hypophosphites act slowly but surely. He considers

that they act by dissolving the tuberculous matter deposited in the folds of the mesentery and mesenteric glands; possibly by causing disintegration of the fibrine. In the *remittent fevers* of childhood Dr. Purdon employed the hypophosphites with marked success. They seem to fulfil, he says, all the required indications, in causing sleep, relieving thirst, cleansing the tongue, increasing the appetite, and arresting any resisting intestinal disorder in a much shorter time than can be obtained by any other remedy." — *Braithwaite's Retrospect*.

For children cutting their teeth, the Syrup given in doses of one-half to one small teaspoonful in half a wineglassful of water in the twenty-four hours, and be so divided as to give one-quarter every sixth hour, will be found to produce immediately a beneficial effect.

"It gives vigor and strength to nursing mothers, imparting the necessary elements to their milk, for the production of bone and sinew in the child, besides preventing in many cases that draining of the system brought about by improper feeding, badly ventilated dwellings, and excessive lactation." — *British Medical Journal*, 1880.

The writer has found these hypophosphites highly useful in complaints of infancy connected with the scrofulous diathesis and defect in the osseous system.

For the administration of phosphorus there is not a more certain, a more efficient or safer medium than the Chemically Pure Hypophosphites, and the adaptation of DR. MCARTHUR'S SYRUP to the treatment of *Nervous Affections* renders them very useful as *adjuncts* in a

great variety of diseases, inasmuch as the *Hypophosphites* are more readily absorbed by the system than all other preparations of *phosphorus*.

DR. DONALD MCGREGOR writes as follows:

"In the '*Consequences*' of *Spermatorrhæa*, where there is general weakness and nervous irritability, DR. McARTHUR'S SYRUP IS A CAPITAL REMEDY, and in *impotence*, where there is want of sexual vigor, etc., in *old* or *young*, I have never had anything serve me so well as the following:

R Syr: Hypophos: Comp: McArthur, one bottle.
Fld. Ext. Damiana, 2 ounces.

M. Sig.: Two teaspoonfuls three or four times a day.

The writer has found the following prescription singularly useful in *spermatorrhæa* and *impotence*:

R Liquor Strychniæ. ℥ij.
Fld. Ext. Coca, ℥ij.
Syr: Hypophos: Comp: McArthur, one bottle.

M. Sig. Dose:—Two to three teaspoonfuls before each meal, either clear or in a little port wine or water.

When *strychnia* or *nux vomica* is indicated, the following makes an elegant preparation, and will be found excellent in dyspepsia, with headache, lassitude, and constipation. It has also been employed with *asserted* success in neuralgia and chorea, and will promptly restore to its normal beat the arhythmic pulse so frequently found in aged patients.

R Liquor Strychniæ=℥ij (equal to one grain of Strychniæ).
Syr: Hypophos: Comp: McArthur, one bottle.

M. Sig. Dose.—Two teaspoonfuls three times daily to adults.

NOTE.—The effects of *Strychniæ* upon the system are identical in character with those of *Nux Vomica*. Under the head of *TINCTURA NUCIS VOMICÆ*, the “*Dispensatory of the United States*” says: “The tincture is not an eligible form for administering *Nux Vomica*, as it is equally uncertain with the medicine in substance, and has the disadvantage of excessive bitterness. *Strychniæ* is preferable.”

Physicians will find the following a most agreeable and effective mode of administering a pure bitter tonic, with the Syrup Hypophosphites, when such is indicated. It excites the appetite, invigorates digestion, and agrees with the most delicate stomachs.

R Syr: Hypophos: Comp: McArthur, one bottle.
Tinct. Gentian, ʒij.

M. Sig. Dose for adult, a dessertspoonful three times a day, before meals, in a little water.

In cases where a powerful and *ferruginous tonic* is required, I am in the habit of writing thus:—

R Ferri et Quinlæ Citras, ʒj.
Syr: Hypophos: Comp: McArthur, one bottle.

M. Sig. Dose.—Two teaspoonfuls in water, to adults, during the meal. For children, according to age.

The above prescription is particularly recommended in cases of anæmia, or poorness of the blood; in general debility and loss of strength; in the convalescence of some acute diseases, when all febrile symptoms have disappeared; in the relaxed and debilitated state of the system occasioned by *uterine affections*, such as chronic *leucorrhæa* and *spermatorrhæa*; and it may be relied upon for the treatment of irregularity in the circulation of the blood in young females, accompanied by paleness of the complexion, etc. It in-

creases the red globules of the blood, and powerfully aids in the formation of hæmoglobin.

These *Hypophosphites* are antagonistic to intemperance and to the opium habit, and the use of them will do away with that feeling of weakness and depression that impels to the use of alcoholic beverages and narcotics, the following being an excellent and *proved* prescription:—

R Syr: Hypophos: Comp: McArthur, one bottle.
Tinctura Cinchonæ, ℥ij. to ℥iv. Vel. Tinct. Coca.

M. S. Dose.—A tablespoonful in 1-2 tumbler of cold water three times daily, either before, after, or with the meal.

The following combination affords one of the most efficient and elegant tonics to be found in the whole range of the *Pharmacopæia*. It not only improves the appetite, but stimulates digestion and assimilation.

R Ferri et Strychniæ Citras, ʒj.
Syr: Hypophos: Comp: McArthur, one bottle.

Sig. Dose.—Two teaspoonfuls in water, to adults, before, after or with meals.

CODEIA AND THE SYR. HYPOPHOSPHITES as a Sedative in advanced *Phthisis*.

R Codela, grs. xvi.
Syr: Hypophos: McArthur, one bottle.

The DOSE is about two teaspoonfuls three times a day, to be increased or diminished as the case requires. It allays cough without disturbing the digestive system, and is tolerated when opium and its

other alkaloids are not. In many troublesome coughs, particularly if depending on catarrh of the trachea or bronchi, I am in the habit of prescribing the above mixture with all the *benefit* and none of the *ill* effects of opium.

Prof. JACKSON strongly recommends the use of the following mixture in coughs and bronchial affections:

- R** Fluid Ext. Pruni Virg., one ounce.
 Rum, Whiskey or Cognac, one ounce.
 Syr: Hypophos: Comp: McArthur, one bottle.
- M.** S. Dose.—Two tablespoonfuls in the course of the day in divided doses.

“The mixture is most agreeable to the taste and well tolerated by the stomach.”—*Medical Journal*.

The following has just been communicated to me by one of our leading Lynn physicians:

- R** Syr: Hypophos: Comp: McArthur, one bottle.
 Best Old Whiskey, eight ounces.

DOSE.—One tablespoonful three or four times a day, diluted with hot or cold water. He says, “with this medicine I know I have arrested and probably cured *four cases of incipient consumption* during the last year.”

Syr: Hypophos: Comp: McArthur.

CHEMICALLY PURE

GENERAL DIRECTIONS FOR USE,—DOSE, ETC.

There is no fixed or invariable dose. My *Syrup of the Hypophosphites of Lime and Soda* combines with a neutral syrup twelve and one-half centigrammes of the hypophosphites to each teaspoonful.

As a general rule, for an adult, begin with two teaspoonfuls morning, noon and night, before, after, or with the meal, and increase gradually to a tablespoonful, *three times daily*.

In case of females of very delicate constitutions, leading a sedentary life and not used to much physical exertion, the above dose should be reduced from one-quarter to one-half.

For children from eight to thirteen, the dose is the same as for delicate females.

For a child from two to seven years of age, the dose should be from *one-third* to one teaspoonful.

For *teething* infants the dose should seldom exceed one small teaspoonful in twenty-four hours, and be so divided as to give one-quarter every sixth hour. The dose should be regulated, however, by the careful advice of the physician. The Syrup, if given as above to children cutting

their teeth, will be found to produce a most beneficial effect.

The Syrup is free from any medicinal taste whatever, and may be taken alone, or mixed with any of the patient's usual beverages, such as milk, tea, coffee, cold water, etc.

In all cases where alcoholic stimulants are indicated, any kind of pure spirituous liquors (except acid wines) may be added to suit the taste and requirements of each case.

The Syrup should be taken three times a day, before, after, or with the meal.

A very agreeable and refreshing drink may be made by adding lemon juice to the Syrup and water.

NOTE.—Many physicians recommend this method to their patients, particularly those to whom sweet is an objection. The lemon is *not* incompatible with the action of the Hypophosphites.

It will often be found advisable, after the patient has taken the medicine a week or more, to omit the dose for a day, and see how he fares without it; then resume, either in the same or in a smaller or larger dose, according to the indications presented.

Of course the medical attendant will increase or diminish the above doses according to circumstances.

Physicians when prescribing will please write thus:

R_x Syr: Hypophos: Comp: McArthur. One bottle.

SUGGESTIONS.

It is not reasonable to expect that a remedy, which acts through the functions of nutrition by promoting the building up of new and healthy tissues, and by eliminating those which are diseased, should, in all instances, manifest its action in a few days.

When the lungs are only slightly affected, or when the disease is of recent origin, this early and immediate action will often be met with. Such, for instance, is the case in acute phthisis or catarrhal pneumonia. Otherwise, when the local disease is extensive, or has already lasted some time, the action of the remedy must be chronic like the disease itself.

As there is very great variability in the immediate effect produced upon different patients, the physician should therefore carefully feel his way, increasing the dose every second or third day until some apparent effect is produced either upon one, several, or the whole of the symptoms. When once this has been obtained, and the treatment has been continued for about a week, it will often be found advisable to omit the treatment for one or two days, and see how the patient fares without it. After this it should be resumed, either in the same or in smaller or larger dose, according to the indications presented.

The interval may be gradually increased with improvement in the patient's health, and his showing signs of physiogenic plethora. When all the general symptoms (weakness, emaciation, etc.) have disappeared, and nothing remains but those depending upon the local condition, such as cough, expectoration, etc., two or three doses, sometimes even only one dose a week will be found sufficient to keep the patient in the state of physiogenic plethora necessary for the completion of the cure.

But, as already said, this will vary with every individual case. Some patients require a daily dose of three or four teaspoonfuls and cannot do with less; others feel better with even one teaspoonful.

When the cure is once complete, when the local lesions have dis-

appeared, or have cicatrized, the patient should continue to take one or two doses a week as a prophylactic. Many patients find that they cannot leave off the treatment altogether for a longer time than three or four weeks without feeling the want of it, and getting below PAR, particularly if they remain in the same hygienic conditions (such as over-work, etc.) as those which originated the complaint. I have even met with some who could not leave it off for a single day without feeling the want of it.

Dr. Barella, in an article in "*Le Scalpel*," December, states the current opinion on the continent with regard to the hypophosphites: "*There is not a single organ of the French or foreign medical press, which has not published cases CONCLUSIVE as to the therapeutical value of the hypophosphites IN EVERY STAGE OF consumption. Many of these cases have been collected in the public hospitals. In the present state of science, and although we have to deal with a disease which has been looked upon as incurable, and which carries off one-third of the adult population, IT IS A FACT, WHICH NOBODY WILL NOW DENY, THAT THE TREATMENT BY THE HYPOPHOSPHITES PRODUCES REMARKABLE AND, IN SOME CASES, IMMEDIATE EFFECT. The cases of cure are the more numerous in proportion as the disease itself is less advanced. Discussion has been exhausted as to Dr. Churchill's doctrine, which, as we know, is founded on the principle of stœchiology, that is to say, upon the study of the constituent elements of the proximate principles of which our system is built up. Dr. Churchill DOES NOT PRETEND, AS HAS BEEN ASSERTED, TO CURE THOSE WHO ARE ALREADY DYING. His treatment (by the hypophosphites) is the specific remedy for the diathesis or general condition, and NOT FOR THE LOCAL DISORGANIZATION to which it leads. HE THEREFORE PRETENDS TO CURE ONLY UNDER CERTAIN CONDITIONS, and by following certain rules, which he has minutely explained in his work on the subject.*

ON THE PREVENTION OF TUBERCULOSIS.

The following report has been forwarded to the Board of Health of New York City in response to the accompanying resolution of the Board.

Resolved, That Drs. T. M. Prudden, H. M. Biggs, and H. P. Loomis, the pathologists of this department, be and are hereby requested to formulate a brief and comprehensive statement regarding the contagiousness of tuberculosis in man, stating therein the evidence of the same and recommending in the briefest possible manner practicable the simplest means of protection from its influence.

REPORT.

The disease known as tuberculosis and, when affecting the lungs, as pulmonary tuberculosis (consumption), is very common in the human being and in certain of the domestic animals, especially cattle. About one-fourth of all deaths occurring in the human being during adult life is caused by it, and nearly one-half of the entire population at some time in life acquires it. The disease is the same in nature in animals and in man, and has the same cause.

It has been proven beyond a doubt that a living germ, called the tubercle bacillus, is the cause and the only cause of tuberculosis. It does not seem necessary to state the facts upon which this assertion is based, for the ob-

servation first made by Robert Koch, in 1882, has been confirmed so often and so completely, that it now constitutes one of the most absolutely demonstrated facts in medicine.

Tuberculosis may affect any organ of the body, but most frequently first involves the lungs. When the living germs find their way into the body they multiply there, if favorable conditions for their growth exist, and produce small new growths or nodules (tubercles) which tend to soften. The discharges from these softened tubercles, containing the living germs, are thrown off from the body. In pulmonary tuberculosis these discharges constitute, in part, the expectoration. The germs thus thrown off do not grow outside the living human or animal body, except under artificial conditions, although they may retain their vitality and virulence for long periods of time, even when thoroughly dried. As tuberculosis can only result from the action of these germs, it follows from what has just been said, that when the disease is acquired, it must result from receiving into the body the living germs that have come from some other human being or animal affected with the disease.

It has been abundantly established that the disease may be transmitted by meat or milk from tubercular animals. The milk glands in milch cows often become affected with the disease when their lungs are involved, and the milk from such animals may contain the living germs and is capable of producing the disease. Among

stall-fed dairy cows 20 or 30 per cent. are sometimes found to be affected with the disease. Tubercular animals are also frequently killed for food; their flesh sometimes contains the germs, and if not thoroughly cooked is capable of transmitting the disease. Boiling the milk or thoroughly cooking the meat destroys the germs. Although the meat and milk from tubercular animals constitute actual and important sources of danger, the disease is acquired, as a rule, through its communication from man to man.

Tuberculosis is commonly produced in the lungs (which are the organs most frequently affected) by breathing air in which the living germs are suspended as dust. The material which is coughed up, sometimes in large quantities, by persons suffering from consumption contains these germs, often in enormous numbers. This material when expectorated frequently lodges in places where it afterward dries, as on the streets, floors, carpets, clothing, handkerchiefs, etc. After drying, in one way or another, it is very apt to become pulverized and float in the air as dust.

It has been shown experimentally, that dust collected from the most varied points, in hospital wards, asylums, prisons, private houses, etc., where consumptive patients are present, or have been present, is capable of producing tuberculosis in animals when used for their inoculation. Such dust may retain for weeks its power of producing the disease. On the other hand dust collected from rooms in institutions or houses that have not been occupied by

tubercular patients does not produce the disease when used for the inoculation of animals.

These observations show that where there are cases of pulmonary tuberculosis, under ordinary conditions, the dust surrounding them often contains the tubercle bacilli; and persons inhaling the air in which this dust is suspended may be taking in the living germs. It should, however, be distinctly understood that the breath of tuberculous patients, and the moist sputum, received in proper cups, are not elements of danger, but only the dried and pulverized sputum. The breath and moist sputum are free from danger, because the germs are not dislodged from moist surfaces by currents of air. If all discharges were destroyed at the time of exit from the body, the greatest danger of communication from man to man would be removed.

It then follows, from what has been said, that tuberculosis is a distinctly preventable disease.

It is a well-known fact that some persons, and especially the members of certain families, are particularly liable to tuberculosis, and this liability can be transmitted from parents to children. So marked and so frequent is this liability, and so frequent is the development of the disease in particular families, that the affection has long been considered hereditary. We now know that tuberculosis can only be caused by the entrance of the germ into the body; and that this transmitted liability simply renders the individual a more easy prey to the living germs when once they have gained entrance.

The frequent occurrence of several cases of pulmonary tuberculosis in a family is, then, to be explained, not on the supposition that the disease itself has been inherited, but that it has been produced after birth by transmission directly from some affected individual. Where the parents are affected with tuberculosis the children from the earliest moments of life are exposed to the disease under the most favorable conditions for its transmission, for not only is the dust of the house likely to contain the bacilli, but the relationship also between parents and children, especially between mother and child, are of that close and intimate nature especially favorable for the transmission by direct contact.

If, then, tuberculosis is not inherited, the question of prevention resolves itself, principally, into the avoidance of tubercular meat and milk, and the destruction of the discharges, especially the sputum, of tubercular individuals. As to the first means of communication, those measures of prevention alone answer the requirements which embrace the governmental inspection of dairy cows and of animals slaughtered for food, and the rigid exclusion and destruction of all those found to be tubercular.

For the removal of the second means of communication — *i. e.*, the sputum of tubercular individuals — the problem is simple when the patients are confined to their rooms or houses; then wooden or pasteboard cups with covers should always be at hand for the reception of the sputum. These cups are supported in simple racks, and at least

once daily, or more frequently if necessary, should be removed from the racks and thrown with their contents into the fire.

The disposition of the expectoration of persons who are not confined to their rooms or homes is a far more difficult problem. The expectoration certainly should not be discharged on the street, and the only practical means for its collection seems to be in handkerchiefs, which, when soiled, should at the earliest possible moment be soaked in a solution of five per cent. of carbolic acid and then boiled and washed. Handkerchiefs thus soiled are exceedingly dangerous factors in distributing tubercle bacilli; for when the sputum becomes dry, it is easily separated in flakes from the cloth and then soon becomes pulverized and suspended as dust.

It becomes evident from what has been said, that the means which will most certainly prevent the spread of this disease from one individual to another, are those of scrupulous cleanliness regarding the sputum. These means lie largely within the power of the affected individual. It is, furthermore, to be remembered that consumption is not always, as was formerly supposed, a fatal disease, but that it is in very many cases a distinctly curable affection.

An individual who is well on the road to recovery may, if he does not with the greatest care destroy his sputum, diminish greatly his chances of recovery by self-inoculation.

While the greatest danger of the spread of the disease

from the sick to the well is in private houses and in hospitals, yet, if this danger is thoroughly appreciated it is for the most part quite under control, through the immediate destruction of the sputum and the enforcement of habits of cleanliness. But in places of public assembly, such as churches and theatres, particularly the latter, the conditions are different, and safety would seem to depend largely upon a dilution and partial removal of the floating and possibly dangerous dust by means of adequate ventilation.

Rooms in private houses and hospital wards that are occupied by phthisical patients should from time to time be thoroughly cleaned and disinfected, and this should always be done after they are vacated, before they are again occupied by other individuals.

Steamship companies should be obliged to furnish separate apartments for consumptive persons, so that no person in the exigencies of travel need be forced to share his room with one who might be a source of active danger to him.

We desire especially to emphasize the following facts :

1st. That tuberculosis is a distinctly preventable disease.

2d. That it is not directly inherited ; and

3d. That it is acquired by the direct transmission of the tubercle bacillus from the sick to the healthy, usually by means of the dried and pulverized sputum floating as dust in the air.

The measures, then, which are suggested for the prevention of the spread of tuberculosis are :

1st. The security of the public against tubercular meat and milk, attained by a system of rigid official inspection of cattle ;

2d. The dissemination among the people of the knowledge that every tubercular person may be a source of actual danger to his associates, if the discharges from the lungs are not immediately destroyed or rendered harmless ; and

3d. The careful disinfection of rooms and hospital wards that are occupied or have been occupied by phthical patients.

HERMANN M. BIGGS,

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Pathologists to the New York City Health Department.

THE PREVENTION OF THE SPREAD OF CONSUMPTION.

The following rules to be observed for the prevention of the spread of consumption were approved last July by the Health Department of New York City, and ten thousand copies were ordered to be printed for public distribution.

Pulmonary tuberculosis (consumption) is directly communicated from one person to another. The germ of the

disease exists in the expectoration of persons afflicted with it. The following extract from the report of the pathologists of the Health Department explains the means by which the disease may be transmitted :

“Tuberculosis is commonly produced in the lungs (which are the organs most frequently affected) by breathing air in which living germs are suspended as dust. The material which is coughed up, sometimes in large quantities, by persons suffering from consumption contains these germs often in enormous numbers. . . . This material when expectorated frequently lodges in places where it dries, as on the street, floors, carpets, handkerchiefs, etc. After drying in one way or another it is very apt to become pulverized and float in the air as dust.”

By observing the following rules the danger of catching the disease will be reduced to a minimum :

1. Do not permit persons suspected to have consumption to spit on the floor or on cloths unless the latter be immediately burned. The spittle of persons suspected to have consumption should be caught in earthen or glass dishes containing the following solution : Corrosive sublimate, 1 part ; water, 1000 parts.

2. Do not sleep in a room occupied by a person suspected of having consumption. The living rooms of a consumptive patient should have as little furniture as practicable. Hangings should be especially avoided. The use of carpets, rugs, etc., ought always to be avoided.

3. Do not fail to wash thoroughly the eating utensils

of a person suspected of having consumption, as soon after eating as possible, using boiling water for the purpose.

4. Do not mingle the unwashed clothing of consumptive patients with similar clothing of other persons.

5. Do not fail to catch the bowel discharges of consumptive patients with diarrhœa in a vessel containing corrosive sublimate, 1 part, water 1000 parts.

6. Do not fail to consult the family physician regarding the social relations of persons suffering from suspected consumption.

7. Do not permit mothers suspected of having consumption to nurse their offspring.

8. Household pets (animals or birds) are quite susceptible to tuberculosis; therefore do not expose them to persons afflicted with consumption; also, do not keep, but destroy at once, all household pets suspected of having consumption, otherwise they may give it to human beings.

9. Do not fail to cleanse thoroughly the floors, walls, and ceilings of the living and sleeping-rooms of persons suffering from consumption at least once in two weeks.

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